

Fig. 1

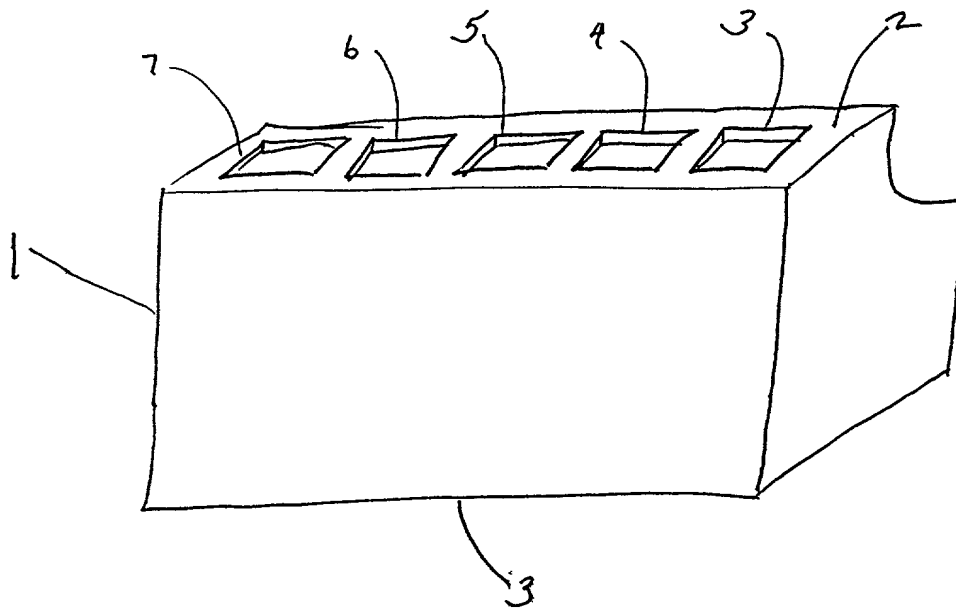
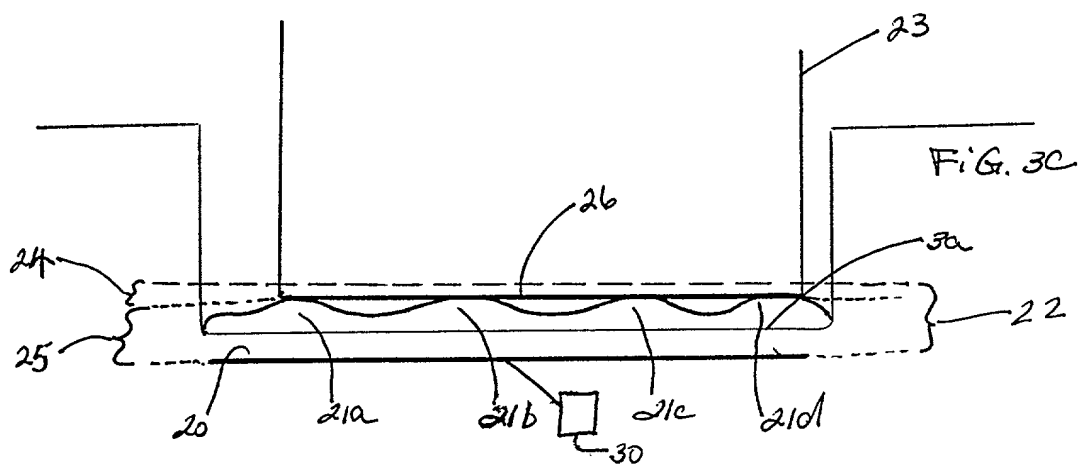
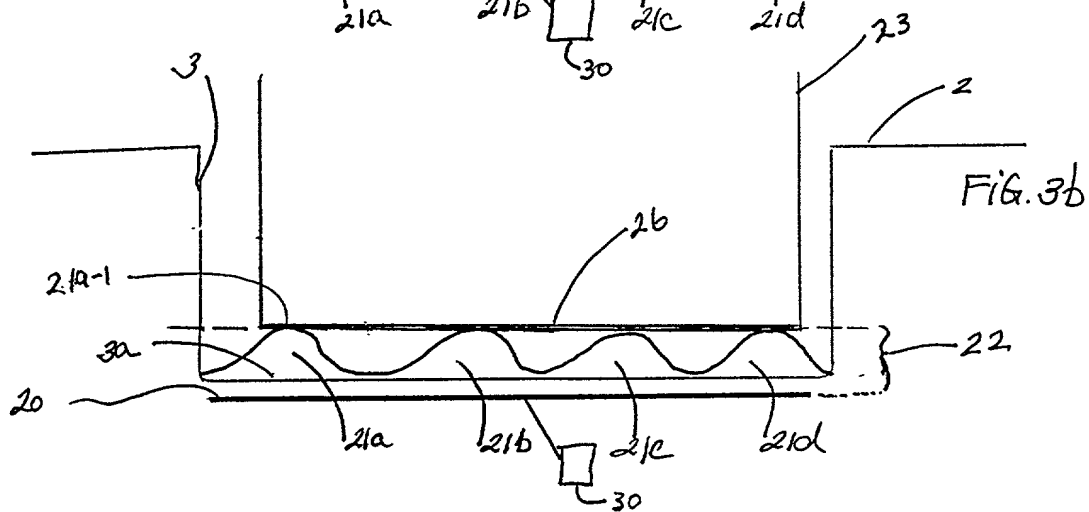
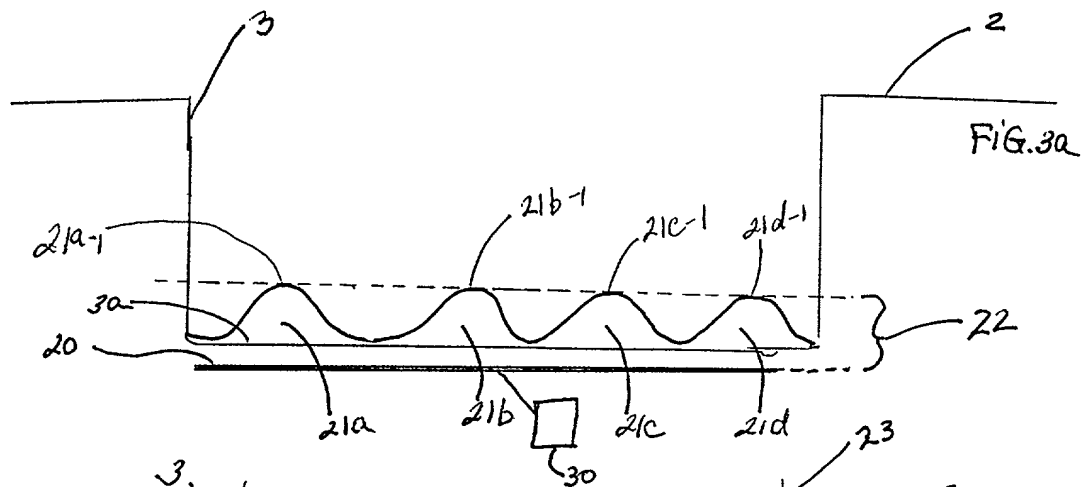


FIG. 2



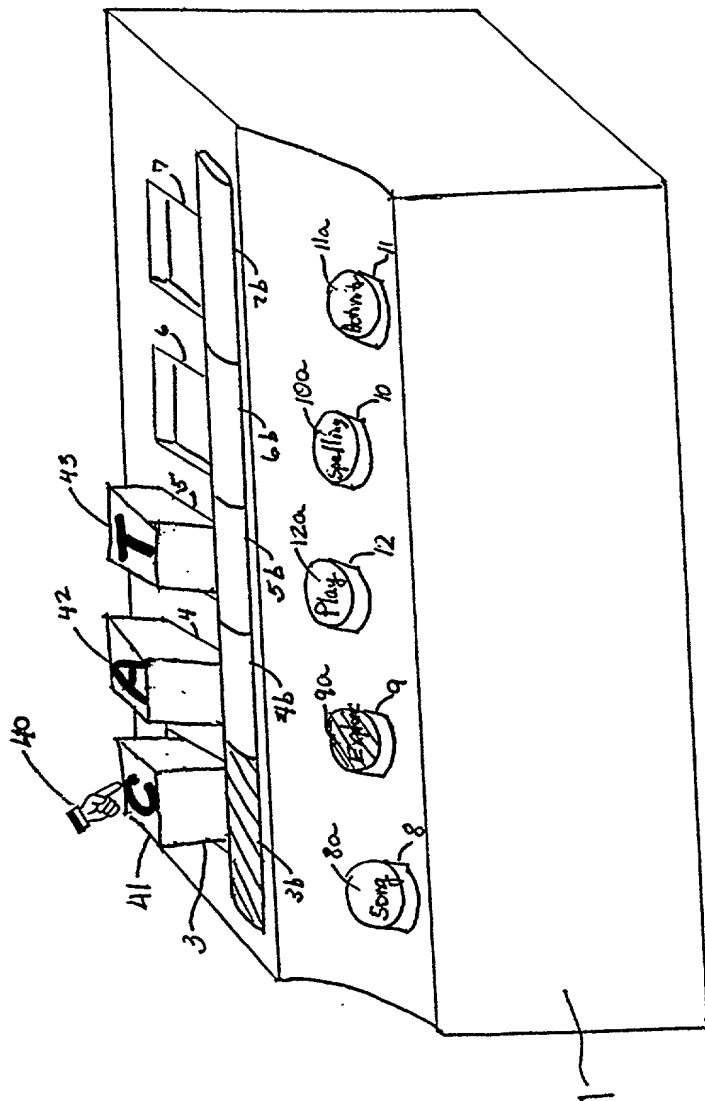


FIG. 4a

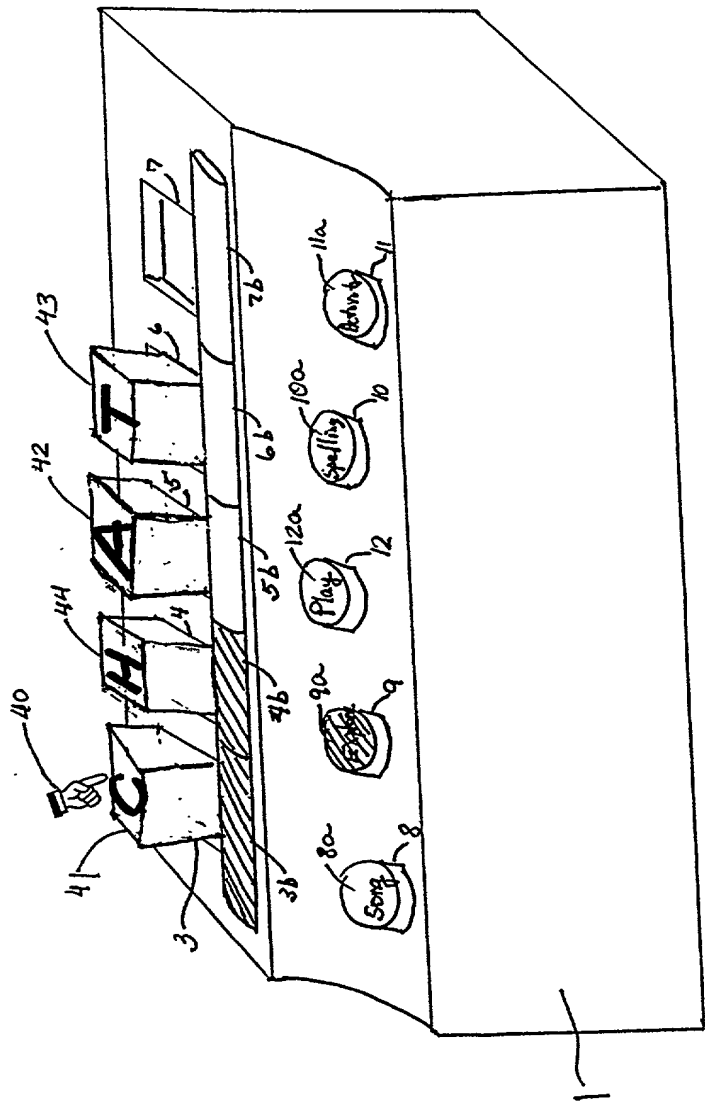


FIG. 4b

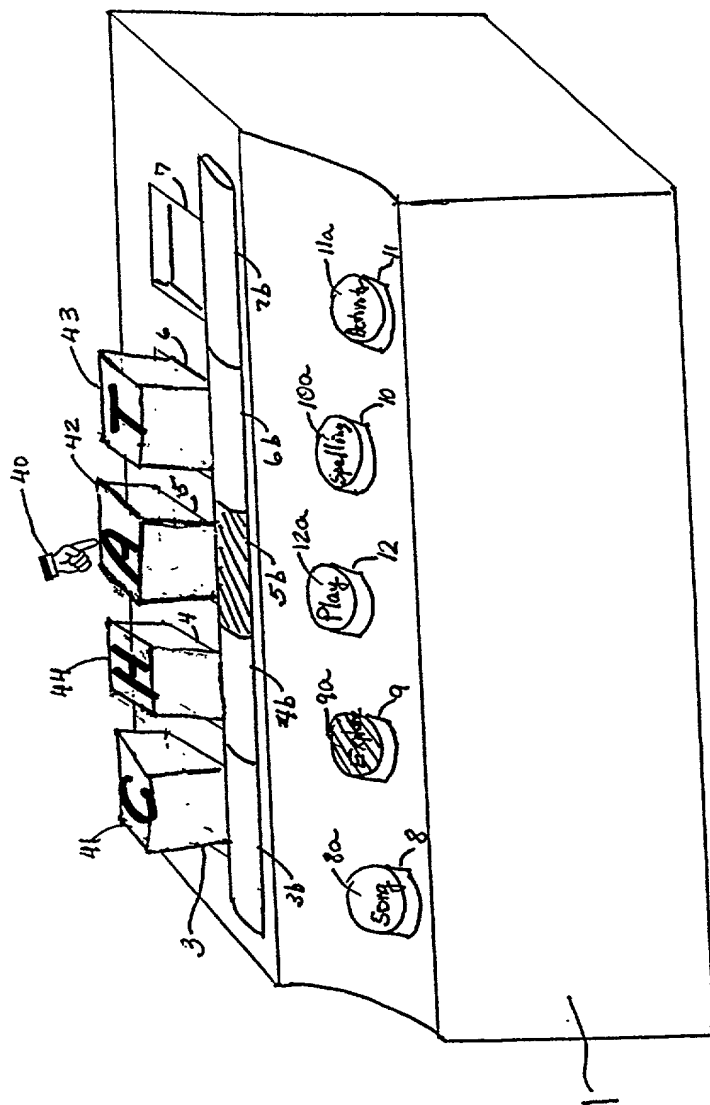


FIG. 4C

Chemical	Formula	Weight	Volume	Concentration	Notes
Hydrochloric acid	HCl	36.46	1.18	12.1	
Sulfuric acid	H ₂ SO ₄	98.08	1.84	18.3	
Nitric acid	HNO ₃	63.01	1.42	15.4	
Phosphoric acid	H ₃ PO ₄	97.99	1.71	17.1	
Acetic acid	CH ₃ COOH	60.05	1.05	10.5	
Formic acid	HCOOH	46.03	1.22	12.2	
Benzoic acid	C ₆ H ₅ COOH	122.12	1.26	12.6	
Salicylic acid	C ₆ H ₄ (OH)COOH	122.12	1.26	12.6	
Aspirin	CH ₃ (C ₆ H ₄)COOH	180.16	1.35	13.5	
Urea	CH ₄ N ₂ O	60.06	1.33	13.3	
Ammonia	NH ₃	17.03	0.68	6.8	
Methanol	CH ₃ OH	32.04	0.79	7.9	
Ethanol	C ₂ H ₅ OH	46.07	0.79	7.9	
Propanol	C ₃ H ₇ OH	60.10	0.80	8.0	
Butanol	C ₄ H ₉ OH	74.12	0.81	8.1	
Pentanol	C ₅ H ₁₁ OH	88.15	0.82	8.2	
Hexanol	C ₆ H ₁₃ OH	102.17	0.83	8.3	
Heptanol	C ₇ H ₁₅ OH	116.20	0.84	8.4	
Octanol	C ₈ H ₁₇ OH	130.23	0.85	8.5	
Nonanol	C ₉ H ₁₉ OH	144.26	0.86	8.6	
Decanol	C ₁₀ H ₂₁ OH	158.28	0.87	8.7	
Undecanol	C ₁₁ H ₂₃ OH	172.31	0.88	8.8	
Dodecanol	C ₁₂ H ₂₅ OH	186.34	0.89	8.9	
Tridecanol	C ₁₃ H ₂₇ OH	200.37	0.90	9.0	
Tetradecanol	C ₁₄ H ₂₉ OH	214.40	0.91	9.1	
Pentadecanol	C ₁₅ H ₃₁ OH	228.43	0.92	9.2	
Hexadecanol	C ₁₆ H ₃₃ OH	242.46	0.93	9.3	
Heptadecanol	C ₁₇ H ₃₅ OH	256.49	0.94	9.4	
Octadecanol	C ₁₈ H ₃₇ OH	270.52	0.95	9.5	
Nonadecanol	C ₁₉ H ₃₉ OH	284.55	0.96	9.6	
Eicosanol	C ₂₀ H ₄₁ OH	298.58	0.97	9.7	
Hentriacontanol	C ₂₁ H ₄₃ OH	312.61	0.98	9.8	
Triacontanol	C ₂₂ H ₄₅ OH	326.64	0.99	9.9	
Dotriacontanol	C ₂₃ H ₄₇ OH	340.67	1.00	10.0	
Tritriacontanol	C ₂₄ H ₄₉ OH	354.70	1.01	10.1	
Tetracontanol	C ₂₅ H ₅₁ OH	368.73	1.02	10.2	
Pentacosanol	C ₂₆ H ₅₃ OH	382.76	1.03	10.3	
Hexacosanol	C ₂₇ H ₅₅ OH	396.79	1.04	10.4	
Heptacosanol	C ₂₈ H ₅₇ OH	410.82	1.05	10.5	
Octacosanol	C ₂₉ H ₅₉ OH	424.85	1.06	10.6	
Nonacosanol	C ₃₀ H ₆₁ OH	438.88	1.07	10.7	
Dotriacontanol	C ₃₁ H ₆₃ OH	452.91	1.08	10.8	
Tritriacontanol	C ₃₂ H ₆₅ OH	466.94	1.09	10.9	
Tetracontanol	C ₃₃ H ₆₇ OH	480.97	1.10	11.0	
Pentacosanol	C ₃₄ H ₆₉ OH	495.00	1.11	11.1	
Hexacosanol	C ₃₅ H ₇₁ OH	509.03	1.12	11.2	
Heptacosanol	C ₃₆ H ₇₃ OH	523.06	1.13	11.3	
Octacosanol	C ₃₇ H ₇₅ OH	537.09	1.14	11.4	
Nonacosanol	C ₃₈ H ₇₇ OH	551.12	1.15	11.5	
Dotriacontanol	C ₃₉ H ₇₉ OH	565.15	1.16	11.6	
Tritriacontanol	C ₄₀ H ₈₁ OH	579.18	1.17	11.7	
Tetracontanol	C ₄₁ H ₈₃ OH	593.21	1.18	11.8	
Pentacosanol	C ₄₂ H ₈₅ OH	607.24	1.19	11.9	
Hexacosanol	C ₄₃ H ₈₇ OH	621.27	1.20	12.0	
Heptacosanol	C _{44</}				

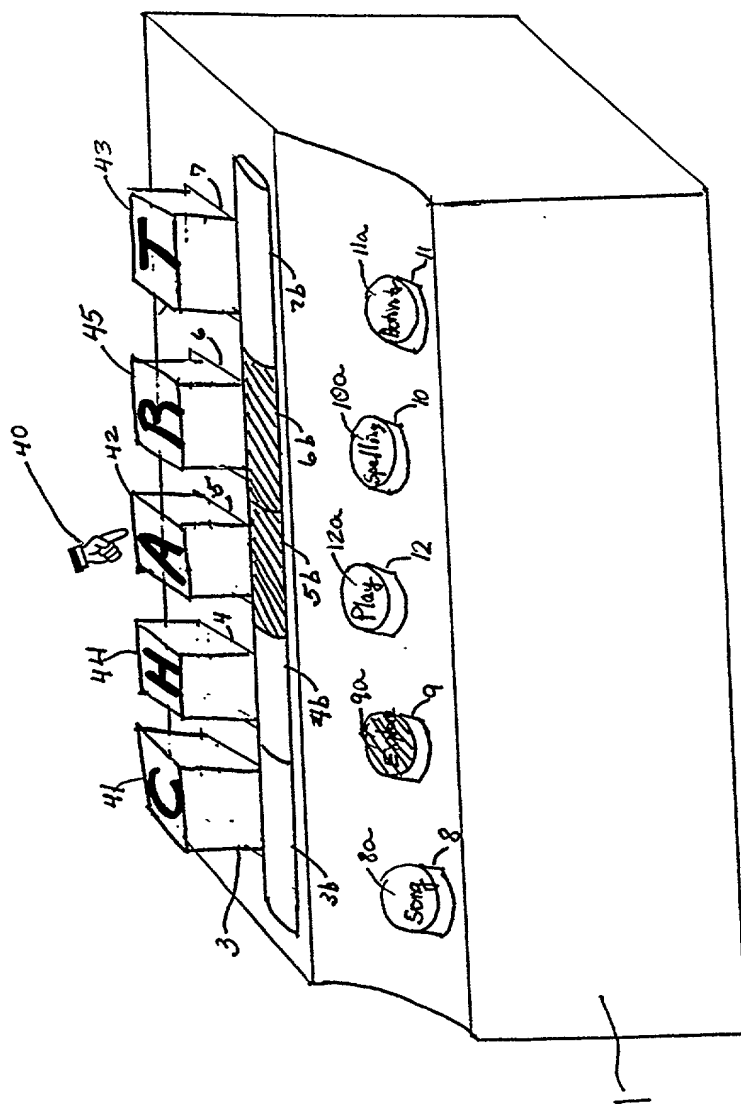


Fig. 4d

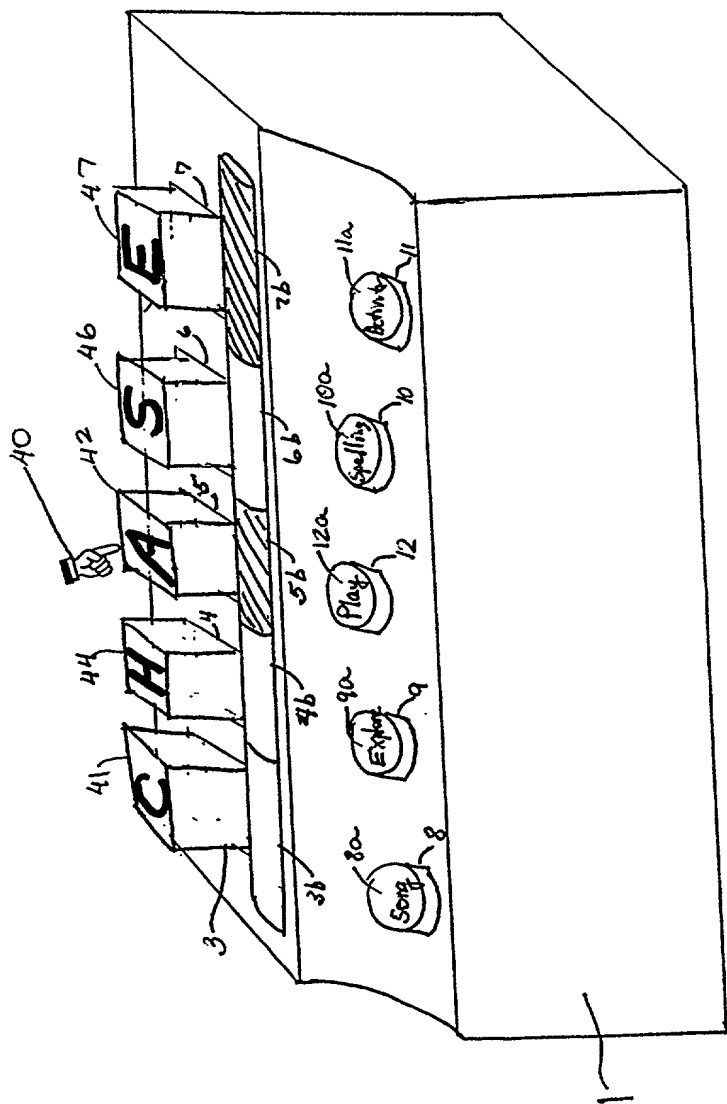


FIG. 4e

100a 100b 48

The 44 Sounds of English

101b 101a

0. silence

Consonant Sounds

1. /b/ (bat)
2. /d/ (dog)
3. /f/ (fan)
4. /g/ (gate)
5. /h/ (hat)
6. /j/ (jump)
7. /k/ (kite)
8. /l/ (leaf)
9. /m/ (mop)
10. /n/ (nest)
11. /p/ (pig)
12. /r/ (rock)
13. /s/ (sun)
14. /t/ (top)
15. /v/ (vase)
16. /w/ (wagon)
17. /y/ (yo-yo)
18. /z/ (zebra)
19. /ch/ (cheese)
20. /sh/ (shark)
21. /zh/ (treasure)
22. /th/ (thumb)

23. /th/ (the)
24. /hw/ (wheel)
25. /ng/ (ring)

Vowel Sounds

26. /ā/ (cake)
27. /ē/ (feet)
28. /ī/ (bike)
29. /ō/ (boat)
30. /yō/ (cube)
31. /a/ (cat)
32. /e/ (bed)
33. /i/ (fish)
34. /o/ (lock)
35. /u/ (duck)
36. /ā/ (alarm)
37. /ā/ (chair)
38. /ū/ (bird)
39. /ū/ (car)
40. /ō/ (ball)
41. /oi/ (boy)
42. /ou/ (house)
43. /ōō/ (moon)
44. /ōō/ (book)

126a 126b 129a 129b

113b 113a 119b 119a

45. /ŕ/ 46. /v/ (won) 47. /x/ 48. /ŕ/ (store)

FIG. 6

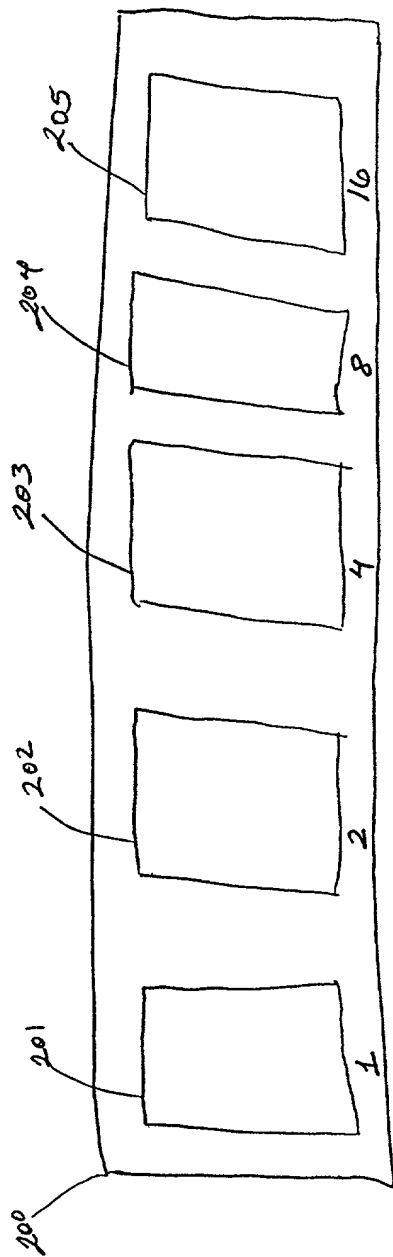


FIG. 7a

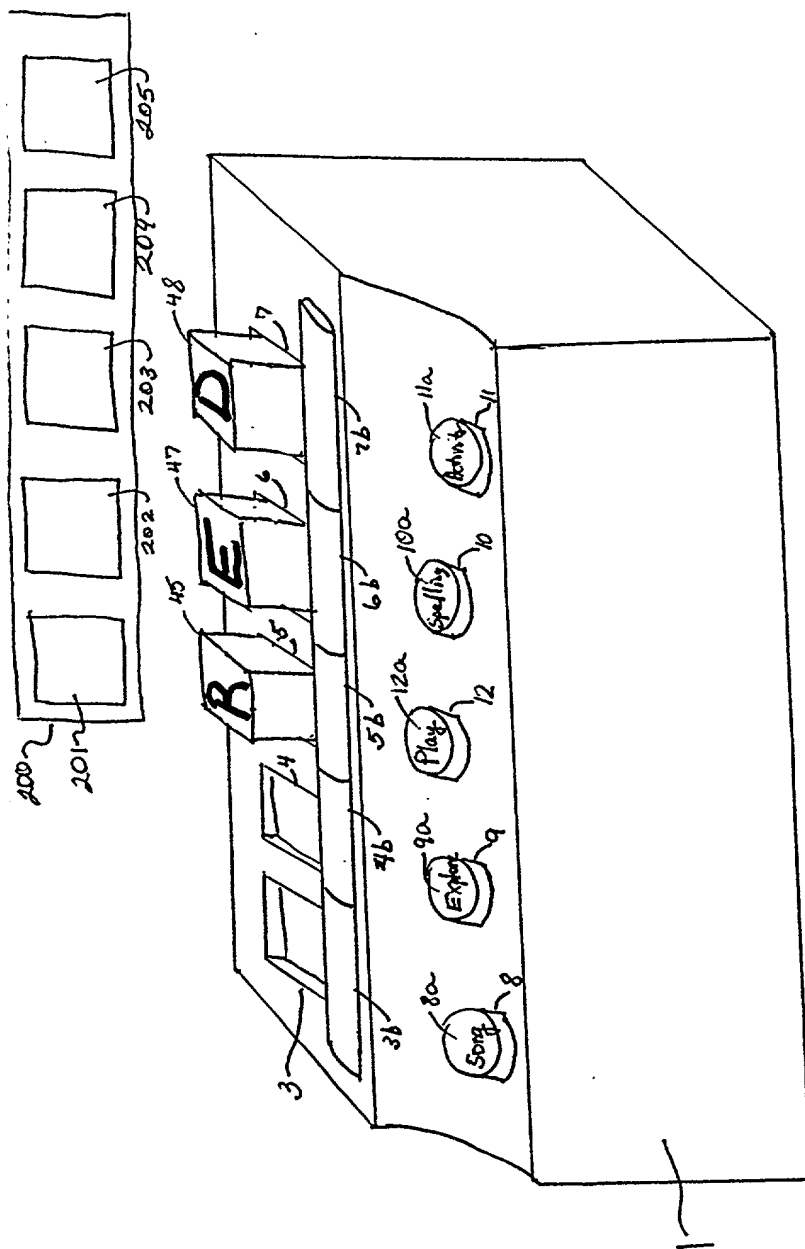


Fig. 7c

25. /to ["to" ["14" "43"] ["01" "02"] true] def
26. /up ["up" ["35" "11"] ["01" "02"] true] def
27. /us ["us" ["35" "13"] ["01" "02"] true] def
28. /we ["we" ["16" "27"] ["01" "02"] true] def
29. /ace ["ace" ["26" "13" "0"] ["05" "02" "05"] true] def
30. /act ["act" ["31" "7" "14"] ["01" "02" "04"] true] def
31. /age ["age" ["26" "6" "0"] ["05" "02" "05"] true] def

FIG. 8a


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101./gnu [ "gnu" [ "0" "10" "43" ] [ "03" "02" "04" ] true ] def
102./got [ "got" [ "4" "34" "14" ] [ "01" "02" "04" ] true ] def
103./gum [ "gum" [ "4" "35" "9" ] [ "01" "02" "04" ] true ] def
104./guy [ "guy" [ "4" "28" "28" ] [ "01" "06" "06" ] true ] def
105./had [ "had" [ "5" "31" "2" ] [ "01" "02" "04" ] true ] def
106./ham [ "ham" [ "5" "31" "9" ] [ "01" "02" "04" ] true ] def
107./has [ "has" [ "5" "31" "18" ] [ "01" "02" "04" ] true ] def
108./hat [ "hat" [ "5" "31" "14" ] [ "01" "02" "04" ] true ] def
109./hay [ "hay" [ "5" "26" "26" ] [ "01" "06" "06" ] true ] def
110./hen [ "hen" [ "5" "32" "10" ] [ "01" "02" "04" ] true ] def
111./her [ "her" [ "5" "38" "12" ] [ "01" "02" "04" ] true ] def
112./hey [ "hey" [ "5" "26" "26" ] [ "01" "06" "06" ] false ] def
113./hid [ "hid" [ "5" "33" "2" ] [ "01" "02" "04" ] true ] def
114./him [ "him" [ "5" "33" "9" ] [ "01" "02" "04" ] true ] def
115./hip [ "hip" [ "5" "33" "11" ] [ "01" "02" "04" ] true ] def
116./his [ "his" [ "5" "33" "18" ] [ "01" "02" "04" ] true ] def
117./hit [ "hit" [ "5" "33" "14" ] [ "01" "02" "04" ] true ] def
118./hog [ "hog" [ "5" "34" "4" ] [ "01" "02" "04" ] true ] def
119./hop [ "hop" [ "5" "34" "11" ] [ "01" "02" "04" ] true ] def
120./hot [ "hot" [ "5" "34" "14" ] [ "01" "02" "04" ] true ] def
121./how [ "how" [ "5" "42" "42" ] [ "01" "06" "06" ] true ] def
122./hug [ "hug" [ "5" "35" "4" ] [ "01" "02" "04" ] true ] def
123./hum [ "hum" [ "5" "35" "9" ] [ "01" "02" "04" ] true ] def
124./hut [ "hut" [ "5" "35" "14" ] [ "01" "02" "04" ] true ] def
125./ice [ "ice" [ "28" "13" "0" ] [ "05" "02" "05" ] true ] def
126./ink [ "ink" [ "33" "10" "7" ] [ "01" "02" "04" ] true ] def
127./jam [ "jam" [ "6" "31" "9" ] [ "01" "02" "04" ] true ] def
128./jar [ "jar" [ "6" "39" "12" ] [ "01" "06" "04" ] true ] def
129./jaw [ "jaw" [ "6" "40" "40" ] [ "01" "05" "04" ] true ] def
130./jet [ "jet" [ "6" "32" "14" ] [ "01" "02" "04" ] true ] def
131./job [ "job" [ "6" "40" "1" ] [ "01" "02" "04" ] true ] def
132./jog [ "jog" [ "6" "40" "4" ] [ "01" "02" "04" ] true ] def
133./joy [ "joy" [ "6" "41" "41" ] [ "01" "06" "06" ] true ] def
134./jug [ "jug" [ "6" "35" "4" ] [ "01" "02" "04" ] true ] def
135./key [ "key" [ "7" "27" "27" ] [ "01" "06" "06" ] true ] def
136./kid [ "kid" [ "7" "33" "2" ] [ "01" "02" "04" ] true ] def
137./kit [ "kit" [ "7" "33" "14" ] [ "01" "02" "04" ] true ] def
138./lab [ "lab" [ "8" "31" "1" ] [ "01" "02" "04" ] true ] def
139./lay [ "lay" [ "8" "26" "26" ] [ "01" "06" "06" ] true ] def
140./leg [ "leg" [ "8" "32" "4" ] [ "01" "02" "04" ] true ] def
141./let [ "let" [ "8" "32" "14" ] [ "01" "02" "04" ] true ] def
142./lid [ "lid" [ "8" "33" "2" ] [ "01" "02" "04" ] true ] def
143./lie [ "lie" [ "8" "28" "0" ] [ "01" "06" "06" ] true ] def
144./lip [ "lip" [ "8" "33" "11" ] [ "01" "02" "04" ] true ] def
145./log [ "log" [ "8" "34" "4" ] [ "01" "02" "04" ] true ] def
146./lot [ "lot" [ "8" "34" "14" ] [ "01" "02" "04" ] true ] def
147./mad [ "mad" [ "9" "31" "2" ] [ "01" "02" "04" ] true ] def
148./man [ "man" [ "9" "31" "10" ] [ "01" "02" "04" ] true ] def
149./map [ "map" [ "9" "31" "11" ] [ "01" "02" "04" ] true ] def
150./mat [ "mat" [ "9" "31" "14" ] [ "01" "02" "04" ] true ] def
151./may [ "may" [ "9" "26" "26" ] [ "01" "06" "06" ] true ] def
152./men [ "men" [ "9" "32" "10" ] [ "01" "02" "04" ] true ] def
153./met [ "met" [ "9" "32" "14" ] [ "01" "02" "04" ] true ] def
154./mix [ "mix" [ "9" "33" "47" ] [ "01" "02" "04" ] true ] def

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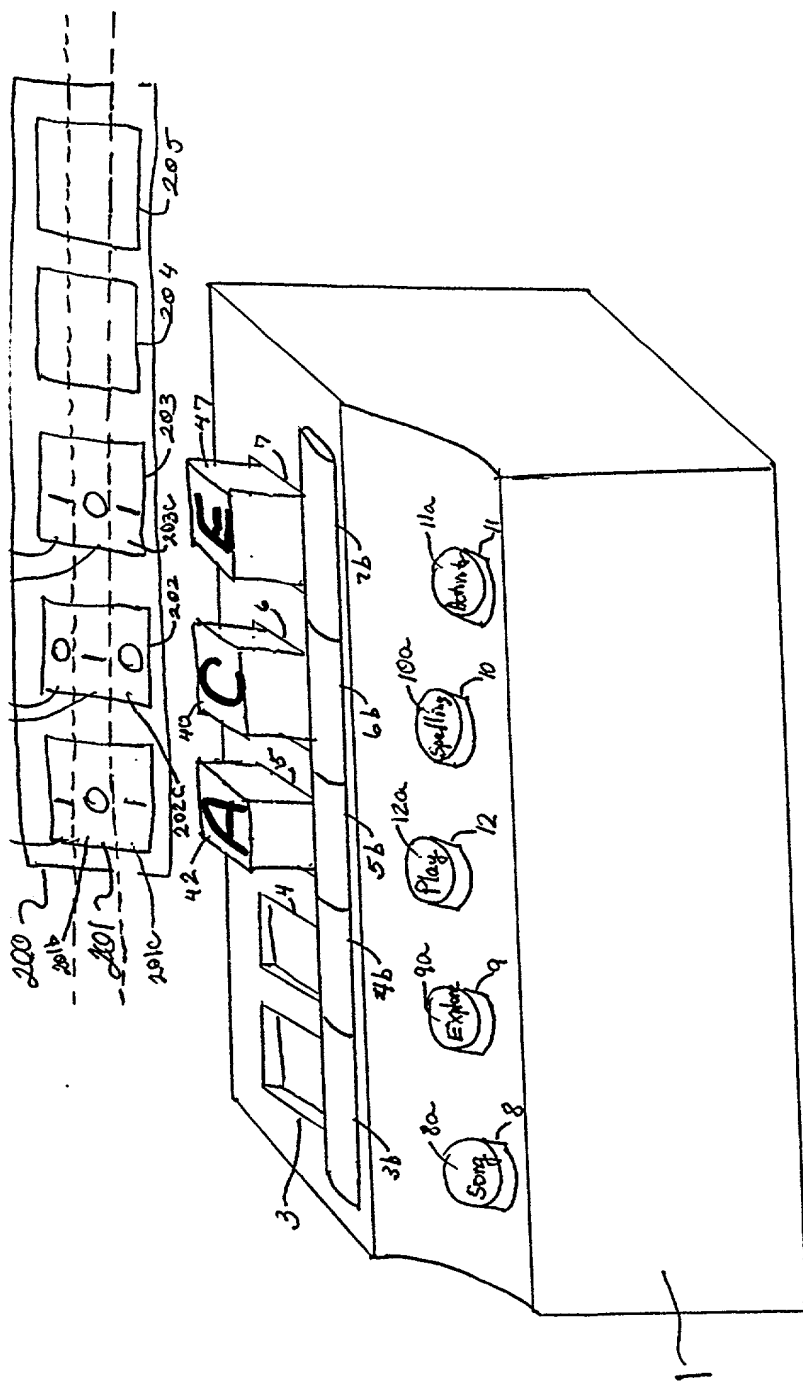
FIG. 8C


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155./mom [ "mom" [ "9" "34" "9" ] [ "01" "02" "04" ] true ] def
156./moo [ "moo" [ "9" "43" "43" ] [ "01" "06" "06" ] true ] def
157./mop [ "mop" [ "9" "34" "11" ] [ "01" "02" "04" ] true ] def
158./mud [ "mud" [ "9" "35" "2" ] [ "01" "02" "04" ] true ] def
159./mug [ "mug" [ "9" "35" "4" ] [ "01" "02" "04" ] true ] def
160./nap [ "nap" [ "10" "31" "11" ] [ "01" "02" "04" ] true ] def
161./net [ "net" [ "10" "32" "14" ] [ "01" "02" "04" ] true ] def
162./new [ "new" [ "10" "43" "43" ] [ "01" "06" "06" ] true ] def
163./nod [ "nod" [ "10" "34" "2" ] [ "01" "02" "04" ] true ] def
164./not [ "not" [ "10" "34" "14" ] [ "01" "02" "04" ] true ] def
165./now [ "now" [ "10" "42" "42" ] [ "01" "06" "06" ] true ] def
166./nut [ "nut" [ "10" "35" "14" ] [ "01" "02" "04" ] true ] def
167./off [ "off" [ "34" "3" "3" ] [ "01" "06" "06" ] true ] def
168./oil [ "oil" [ "41" "41" "8" ] [ "03" "03" "04" ] true ] def
169./old [ "old" [ "29" "8" "2" ] [ "01" "02" "04" ] true ] def
170./one [ "one" [ "16" "10" "0" ] [ "01" "02" "04" ] true ] def
171./our [ "our" [ "42" "42" "12" ] [ "03" "03" "04" ] true ] def
172./out [ "out" [ "42" "42" "14" ] [ "03" "03" "04" ] true ] def
173./owl [ "owl" [ "42" "42" "8" ] [ "01" "02" "04" ] true ] def
174./own [ "own" [ "29" "29" "10" ] [ "01" "02" "04" ] true ] def
175./pad [ "pad" [ "11" "31" "2" ] [ "01" "02" "04" ] true ] def
176./pal [ "pal" [ "11" "31" "8" ] [ "01" "02" "04" ] true ] def
177./pan [ "pan" [ "11" "31" "10" ] [ "01" "02" "04" ] true ] def
178./pat [ "pat" [ "11" "31" "14" ] [ "01" "02" "04" ] true ] def
179./pea [ "pea" [ "11" "27" "27" ] [ "01" "06" "06" ] true ] def
180./pen [ "pen" [ "11" "32" "10" ] [ "01" "02" "04" ] true ] def
181./pet [ "pet" [ "11" "32" "14" ] [ "01" "02" "04" ] true ] def
182./pie [ "pie" [ "11" "28" "28" ] [ "01" "06" "06" ] true ] def
183./pig [ "pig" [ "11" "33" "4" ] [ "01" "02" "04" ] true ] def
184./pin [ "pin" [ "11" "33" "10" ] [ "01" "02" "04" ] true ] def
185./pit [ "pit" [ "11" "33" "14" ] [ "01" "02" "04" ] true ] def
186./pop [ "pop" [ "11" "34" "11" ] [ "01" "02" "04" ] true ] def
187./pot [ "pot" [ "11" "34" "14" ] [ "01" "02" "04" ] true ] def
188./put [ "put" [ "11" "36" "14" ] [ "01" "02" "04" ] true ] def
189./rag [ "rag" [ "12" "31" "8" ] [ "01" "02" "04" ] true ] def
190./ram [ "ram" [ "12" "31" "9" ] [ "01" "02" "04" ] true ] def
191./ran [ "ran" [ "12" "31" "10" ] [ "01" "02" "04" ] true ] def
192./rap [ "rap" [ "12" "31" "11" ] [ "01" "02" "04" ] true ] def
193./rat [ "rat" [ "12" "31" "14" ] [ "01" "02" "04" ] true ] def
194./raw [ "raw" [ "12" "34" "34" ] [ "01" "06" "06" ] true ] def
195./ray [ "ray" [ "12" "26" "26" ] [ "01" "06" "06" ] true ] def
196./red [ "red" [ "12" "31" "2" ] [ "01" "02" "04" ] true ] def
197./rib [ "rib" [ "12" "33" "1" ] [ "01" "02" "04" ] true ] def
198./rid [ "rid" [ "12" "33" "2" ] [ "01" "02" "04" ] true ] def
199./rip [ "rip" [ "12" "33" "11" ] [ "01" "02" "04" ] true ] def
200./rod [ "rod" [ "12" "34" "2" ] [ "01" "02" "04" ] true ] def
201./rot [ "rot" [ "12" "34" "14" ] [ "01" "02" "04" ] true ] def
202./row [ "row" [ "12" "29" "29" ] [ "01" "06" "06" ] true ] def
203./rub [ "rub" [ "12" "35" "1" ] [ "01" "02" "04" ] true ] def
204./rug [ "rug" [ "12" "35" "4" ] [ "01" "02" "04" ] true ] def
205./run [ "run" [ "12" "35" "10" ] [ "01" "02" "04" ] true ] def
206./sad [ "sad" [ "13" "31" "2" ] [ "01" "02" "04" ] true ] def
207./sat [ "sat" [ "13" "31" "14" ] [ "01" "02" "04" ] true ] def
208./saw [ "saw" [ "13" "40" "40" ] [ "01" "06" "06" ] true ] def

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FIG. 8d



951

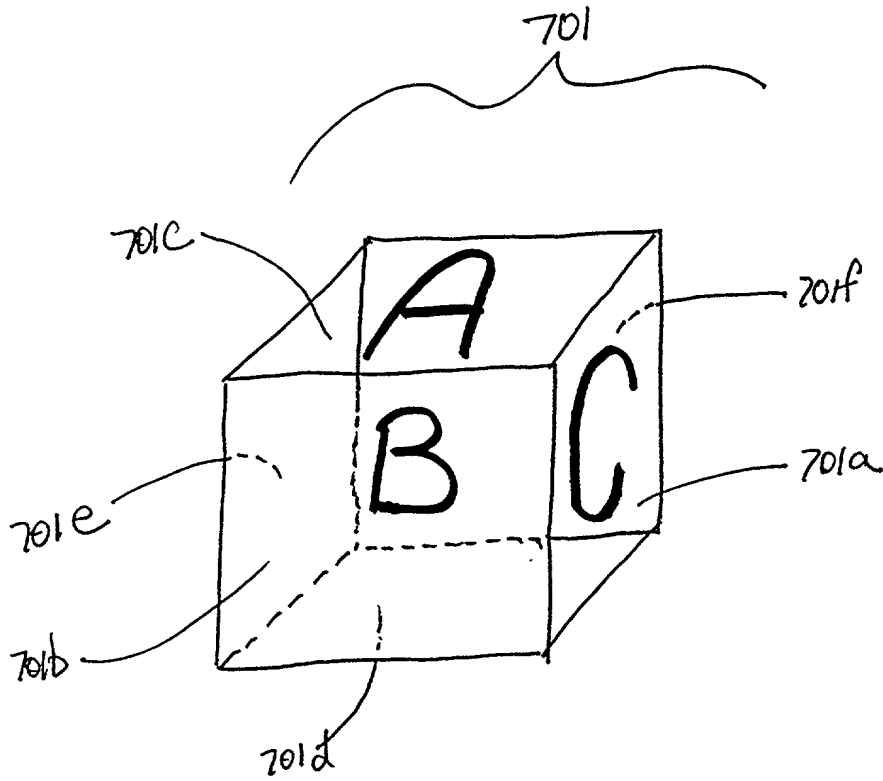


FIG. 10

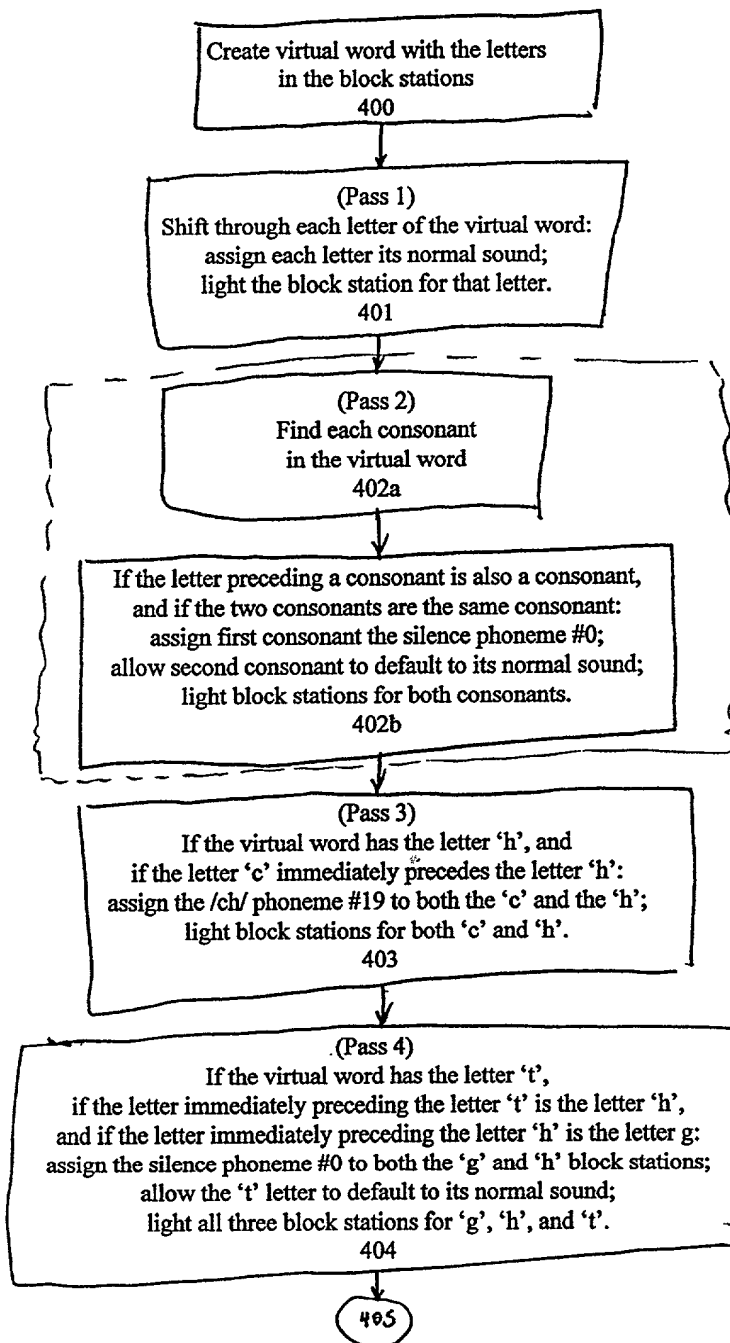


FIG. 11a

404 403 402 401 400 399 398 397 396 395 394 393 392 391 390 389 388 387 386 385 384 383 382 381 380 379 378 377 376 375 374 373 372 371 370 369 368 367 366 365 364 363 362 361 360 359 358 357 356 355 354 353 352 351 350 349 348 347 346 345 344 343 342 341 340 339 338 337 336 335 334 333 332 331 330 329 328 327 326 325 324 323 322 321 320 319 318 317 316 315 314 313 312 311 310 309 308 307 306 305 304 303 302 301 300 299 298 297 296 295 294 293 292 291 290 289 288 287 286 285 284 283 282 281 280 279 278 277 276 275 274 273 272 271 270 269 268 267 266 265 264 263 262 261 260 259 258 257 256 255 254 253 252 251 250 249 248 247 246 245 244 243 242 241 240 239 238 237 236 235 234 233 232 231 230 229 228 227 226 225 224 223 222 221 220 219 218 217 216 215 214 213 212 211 210 209 208 207 206 205 204 203 202 201 200 199 198 197 196 195 194 193 192 191 190 189 188 187 186 185 184 183 182 181 180 179 178 177 176 175 174 173 172 171 170 169 168 167 166 165 164 163 162 161 160 159 158 157 156 155 154 153 152 151 150 149 148 147 146 145 144 143 142 141 140 139 138 137 136 135 134 133 132 131 130 129 128 127 126 125 124 123 122 121 120 119 118 117 116 115 114 113 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

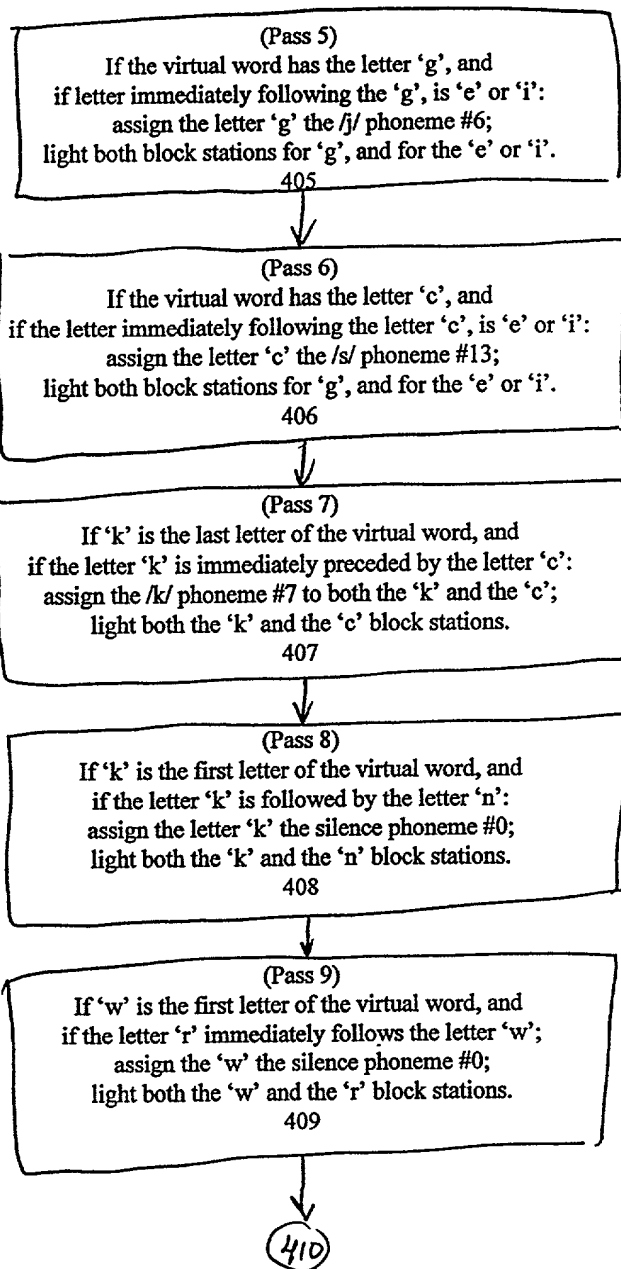


FIG. 11b

(Pass 10)
If the virtual word has the letter 'e', and
if a second letter 'e' precedes or follows the first letter 'e';
assign both letters 'e' the /ē/ phoneme #27;
light the block stations for both 'e' letters.

410

(Pass 11)
If the virtual word has the letter 'r', and
if the letter 'r' is immediately preceded by a vowel, then:
if the vowel is the letter 'i', assign the letter 'i' the /î/ phoneme #38;
else if the vowel is the letter 'u', assign the letter 'u' the /û/ phoneme #38;
else if the vowel is the letter 'e', assign the letter 'e' the /ê/ phoneme #38;
else if the vowel is the letter 'a', assign the letter 'a' the /â/ phoneme #39;
else if the vowel is the letter 'o', assign the letter 'o' the /ô/ phoneme #48;
light the block stations for the vowel and the letter 'r'.

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(Pass 12)
If the virtual word has the letter 'r', and
if the letter 'r' is immediately preceded by the letter 'a' or the letter 'o', and
if the letter 'r' is immediately followed by the letter 'e':
assign the letter 'e' the silence phoneme #0;
if the letter preceding the letter 'r' is the letter 'a', then assign the letter 'a' the /â/
phoneme #37;
else if the letter preceding the letter 'r' is the letter 'o', then assign the letter 'o' the /ô/
phoneme #48;
light the block stations for the letter 'r', and 'e', and for the letters 'a' or 'o'.

412

(Pass 13)
If the virtual word ends in the letter 'y', and
if the virtual word has no vowels:
assign the letter 'y' the /î/ phoneme #28;
else if the virtual word ends in the letter 'y', and
if the virtual word has at least one vowel:
assign the letter 'y' the /ē/ phoneme #27.

413

414

FIG. 11c

43460-433260

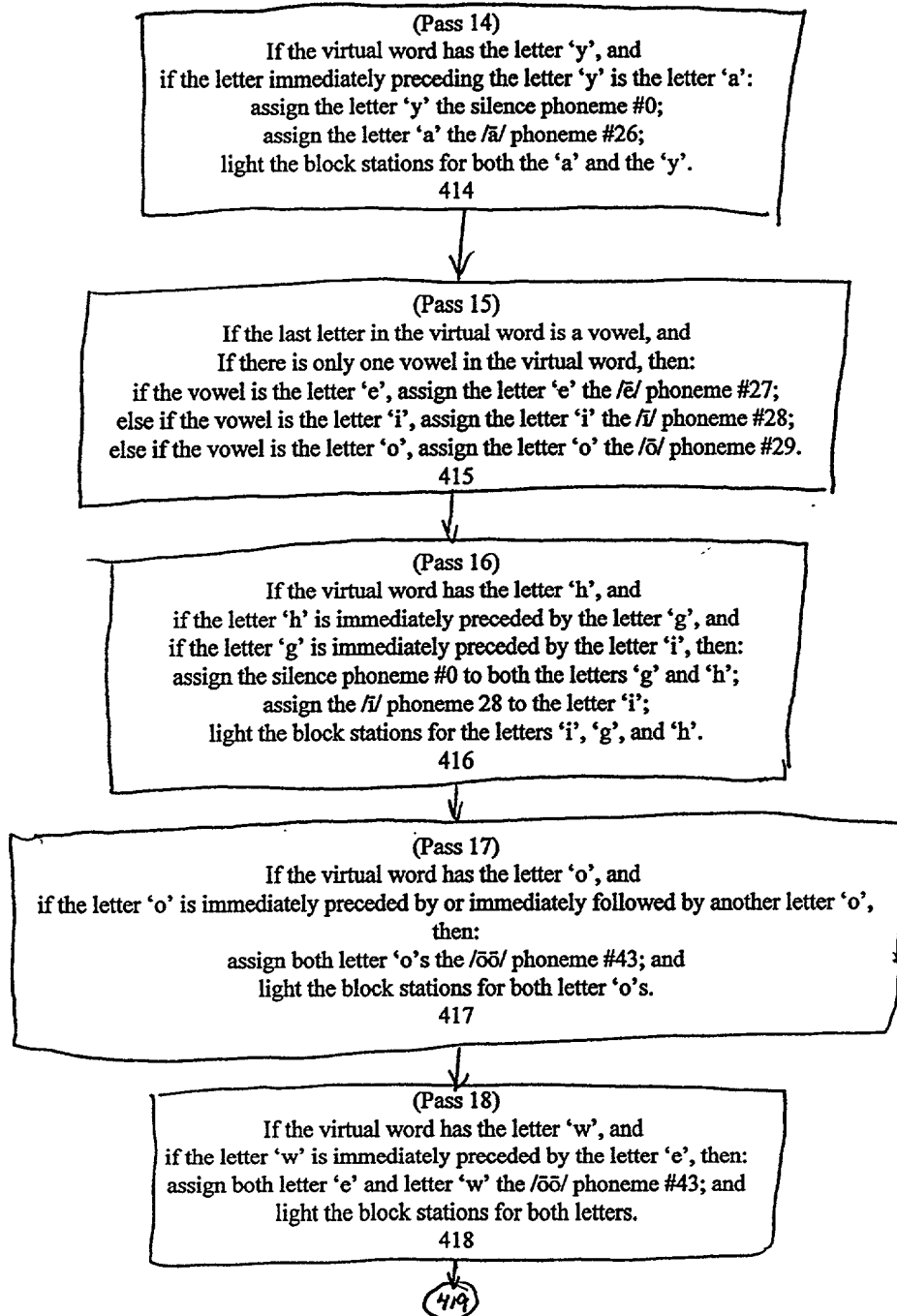


FIG. 11d

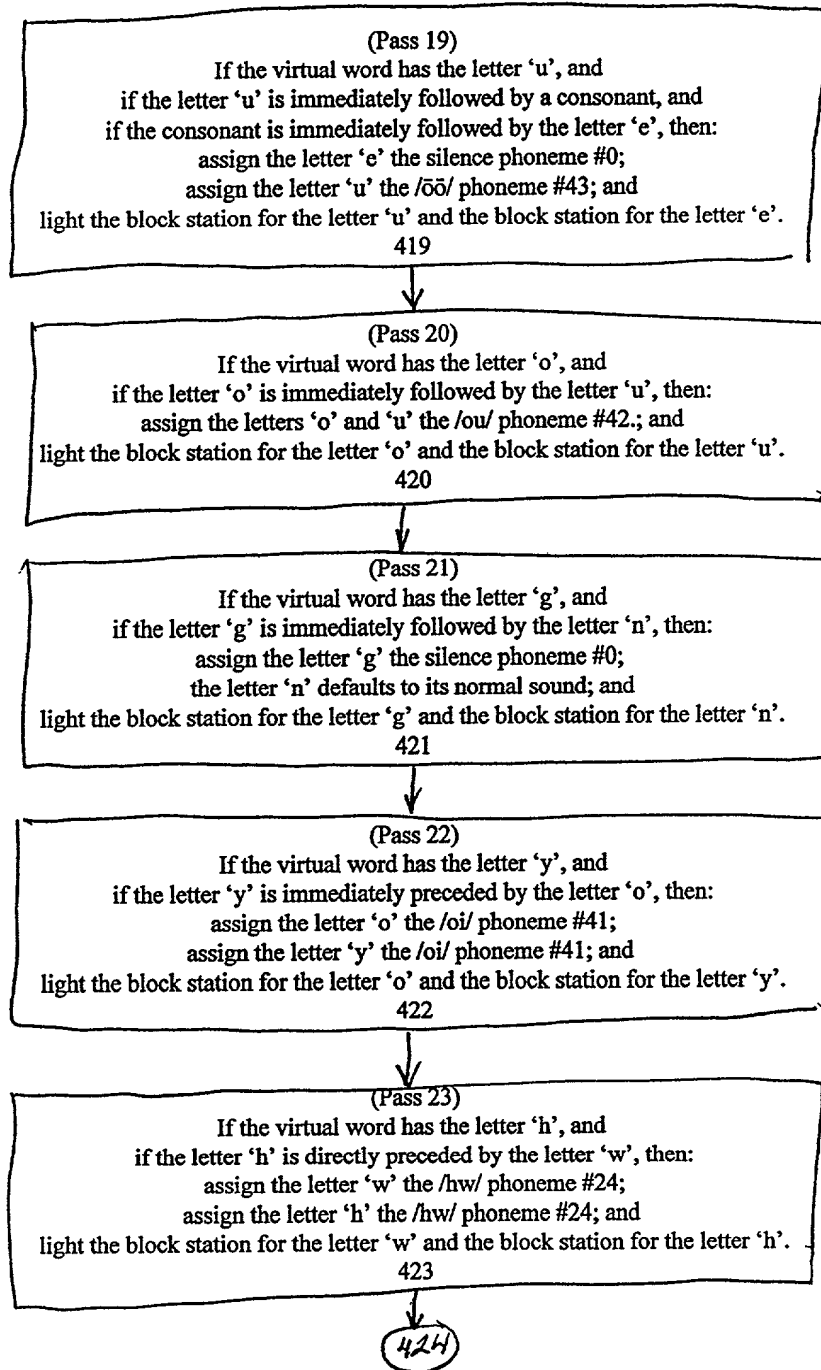


FIG. 11e

(Pass 24)

If the virtual word has two vowels, and
if the word ends in the letter 'e', and
if the letter that directly precedes the letter 'e' is a consonant, then:
assign the letter 'e' the silence phoneme #0;
if the letter directly preceding the consonant is the letter 'a', assign the letter 'a' the /ā/
phoneme #26;
else if the letter directly preceding the consonant is the letter 'e', assign the letter 'e' the
/ē/ phoneme #27;
else if the letter directly preceding the consonant is the letter 'i', assign the letter 'i' the /ī/
phoneme #28;
else if the letter directly preceding the consonant is the letter 'o', assign the letter 'o' the
/ō/ phoneme #29;
else if the letter directly preceding the consonant is the letter 'u', assign the letter 'u' the
/ū/ phoneme #43; and
light the block station for the letter 'e' and the block station for the vowel that directly
precedes the consonant.

424

(Pass 25)

If the virtual word has two vowels, and
if the word ends in the letters 'ed', and
if the letter that directly precedes the letter 'e' is a consonant, then:
assign the letter 'e' the silence phoneme #0;
if the letter directly preceding the consonant is the letter 'a', assign the letter 'a' the /ā/
phoneme #26;
else if the letter directly preceding the consonant is the letter 'e', assign the letter 'e' the
/ē/ phoneme #27;
else if the letter directly preceding the consonant is the letter 'i', assign the letter 'i' the /ī/
phoneme #28;
else if the letter directly preceding the consonant is the letter 'o', assign the letter 'o' the
/ō/ phoneme #29;
else if the letter directly preceding the consonant is the letter 'u', assign the letter 'u' the
/ū/ phoneme #43; and
light the block station for the letter 'e' and the block station for the vowel that directly
precedes the consonant.

425

426

FIG. 11f

(Pass 26)

If the virtual word has two vowels, and
if the word ends in the letters 'es', and
if the letter that directly precedes the letter 'e' is a consonant, then:
assign the letter 'e' the silence phoneme #0;
if the letter directly preceding the consonant is the letter 'a', assign the letter 'a' the /ā/
phoneme #26;
else if the letter directly preceding the consonant is the letter 'e', assign the letter 'e' the
/ē/ phoneme #27;
else if the letter directly preceding the consonant is the letter 'i', assign the letter 'i' the /ī/
phoneme #28;
else if the letter directly preceding the consonant is the letter 'o', assign the letter 'o' the
/ō/ phoneme #29;
else if the letter directly preceding the consonant is the letter 'u', assign the letter 'u' the
/ū/ phoneme #43; and
light the block station for the letter 'e' and the block station for the vowel that directly
precedes the consonant.

426



(Pass 27)

If the virtual word has two vowels, and
if the word ends in the letters 'er', and
if the letter that directly precedes the letter 'e' is a consonant, then:
assign the letter 'e' the /ū/ phoneme #38;
if the letter directly preceding the consonant is the letter 'a', assign the letter 'a' the /ā/
phoneme #26;
else if the letter directly preceding the consonant is the letter 'e', assign the letter 'e' the
/ē/ phoneme #27;
else if the letter directly preceding the consonant is the letter 'i', assign the letter 'i' the /ī/
phoneme #28;
else if the letter directly preceding the consonant is the letter 'o', assign the letter 'o' the
/ō/ phoneme #29;
else if the letter directly preceding the consonant is the letter 'u', assign the letter 'u' the
/ū/ phoneme #43; and
light the block stations for the letters 'e' and 'r' and the block station for the vowel that
directly precedes the consonant.

427



FIG. 11g

(Pass 28)
If the virtual word has the letter 'u', and
if the letter 'u' is directly preceded by the letter 'q', then:
assign the letter 'q' the /k/ phoneme #7;
assign the letter 'u' the /w/ phoneme #16; and
light the block station for the letter 'q' and the block station for the letter 'u'.
428

(Pass 29)
If the virtual word has the letter 'p', and
if the letter 'p' is directly followed by the letter 'h', then:
assign the letter 'p' the /f/ phoneme #3;
assign the letter 'h' the /f/ phoneme #3; and
light the block station for the letter 'p' and the block station for the letter 'h'.
429

(Pass 30)
If the virtual word has the letter 'n', and
if the letter 'n' is directly followed by the letter 'g', then:
assign the letter 'n' the /ng/ phoneme #25;
assign the letter 'g' the /ng/ phoneme #25; and
light the block station for the letter 'n' and the block station for the letter 'g'.
430

(Pass 31)
If the virtual word has the letter 's', and
if the letter 's' is directly followed by the letter 'h', then:
assign the letter 's' the /sh/ phoneme #20;
assign the letter 'h' the /sh/ phoneme #20; and
light the block station for the letter 's' and the block station for the letter 'h'.
431

(Pass 32)
If the virtual word has the letter 't', and
if the letter 't' is directly followed by the letter 'h', then:
assign the letter 't' the /th/ phoneme #22;
assign the letter 'h' the /th/ phoneme #22; and
light the block station for the letter 't' and the block station for the letter 'h'.
432

433

Fig. 11h

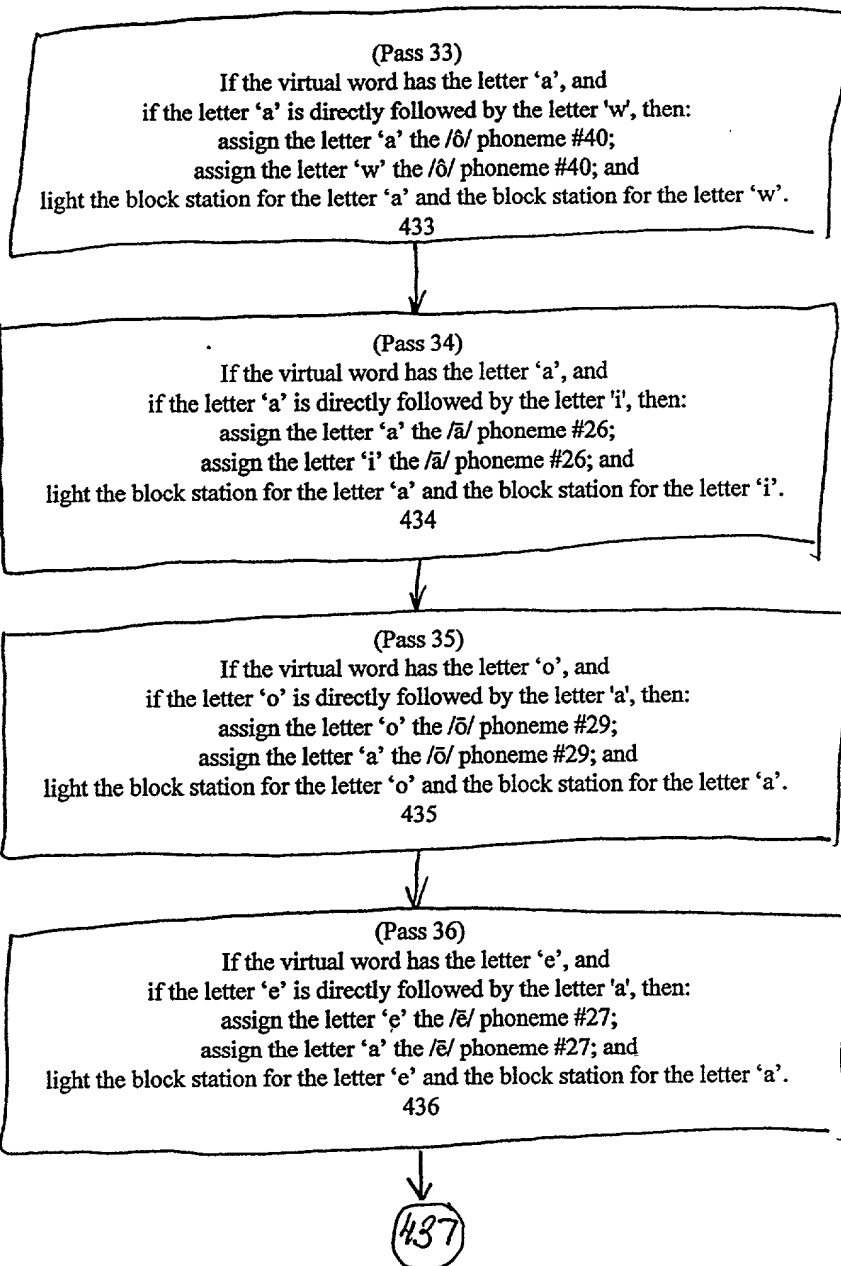


FIG. 11i

(Pass 37)

If the virtual word has the letter 'd', and
if the letter 'd' is directly preceded by the letter 'l',
and if the letter 'l' is directly preceded by the letter 'u', and
if the letter 'u' is directly preceded by the letter 'o', then:
assign the letter 'o' the /ō/ phoneme #44;
assign the letter 'u' the /ū/ phoneme #44;
assign the letter 'l' the silence phoneme #0;
assign the letter 'd' the /d/ phoneme #2; and
light the block stations for the letters 'o', 'u', 'l', and 'd'.

437

(Pass 38)

If the virtual word has the letter 'n', and
if the letter 'n' is directly preceded by the letter 'o',
and if the letter 'o' is directly preceded by the letter 'i', and
if the letter 'i' is directly preceded by the letter 't', then:
assign the letter 't' the /sh/ phoneme #20;
assign the letter 'i' the /sh/ phoneme #20;
assign the letter 'o' the /ə/ phoneme #36;
assign the letter 'n' the /n/ phoneme #10; and
light the block stations for the letters 't', 'i', 'o', and 'n'.

438

(Pass 39)

If the virtual word has the letter 'n', and
if the letter 'n' is directly preceded by the letter 'o',
and if the letter 'o' is directly preceded by the letter 'i', and
if the letter 'i' is directly preceded by the letter 's', then:
assign the letter 's' the /sh/ phoneme #20;
assign the letter 'i' the /sh/ phoneme #20;
assign the letter 'o' the /ə/ phoneme #36;
assign the letter 'n' the /n/ phoneme #10; and
light the block stations for the letters 's', 'i', 'o', and 'n'.

439

440

FIG. 11j

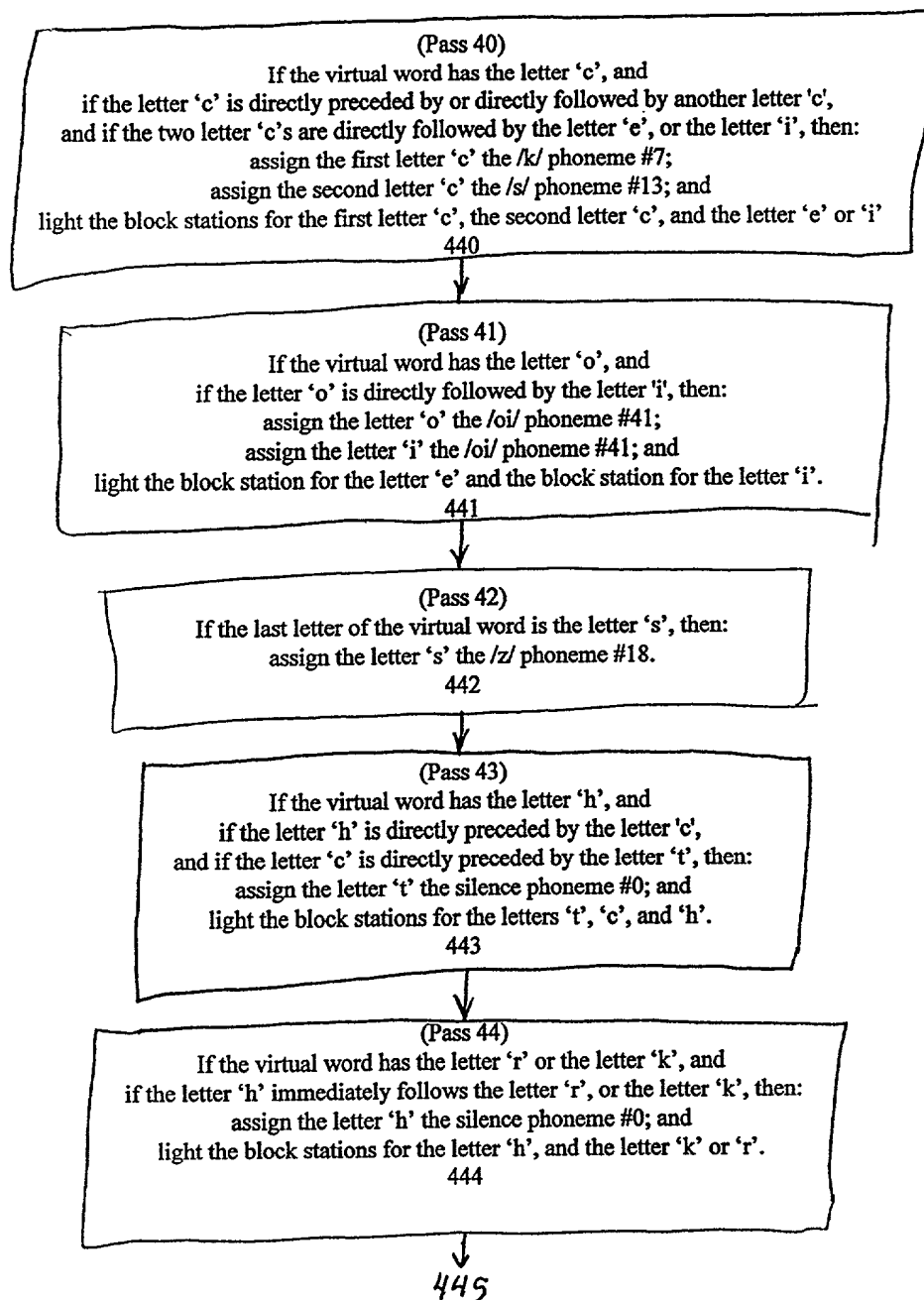


FIG. 11k

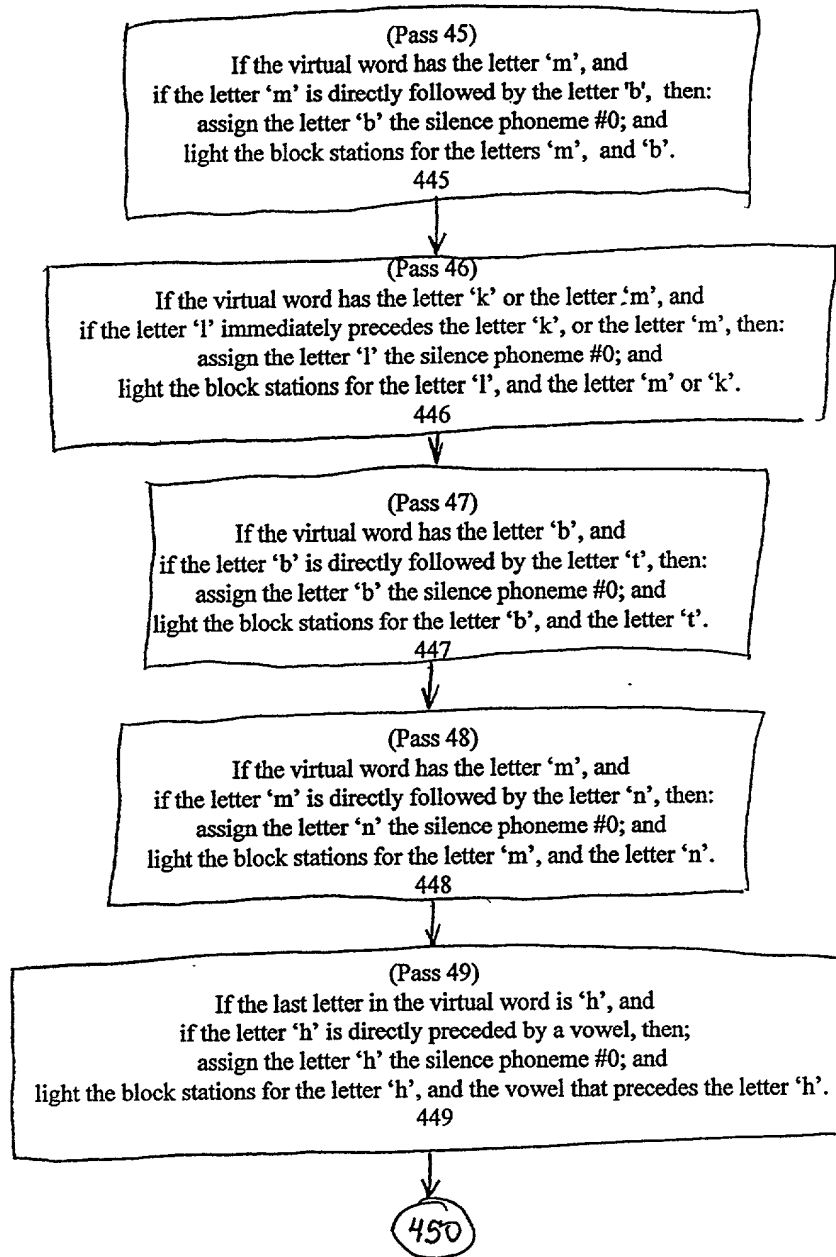


FIG. 11d

(Pass 50)
If the first letter in the virtual word is 'w', and
if the letter directly following the letter 'w' is the letter 'h', and
if the letter directly following the letter 'h' is the letter 'o', then:
assign the letter 'w' the silence phoneme #0; and
light the block stations for the letters 'w', 'h', and 'o'.
450

(Pass 100)
If the virtual word has the letter 'd', and
if the letter 'd' is directly followed by the letter 'g'; or the letter 'j', then:
assign the letter 'd' the silence phoneme #0; and
light the block stations for the letter 'd', and the letter 'g' or 'j'.
451

(Pass 101)
If the last letter in the virtual word is 'm', and
if the letter 'm' is directly preceded by the letter 's', then;
assign the letter 's' the /z/ phoneme #18; and
light the block stations for the letter 's' and the letter 'm'.
452

FIG. 11m

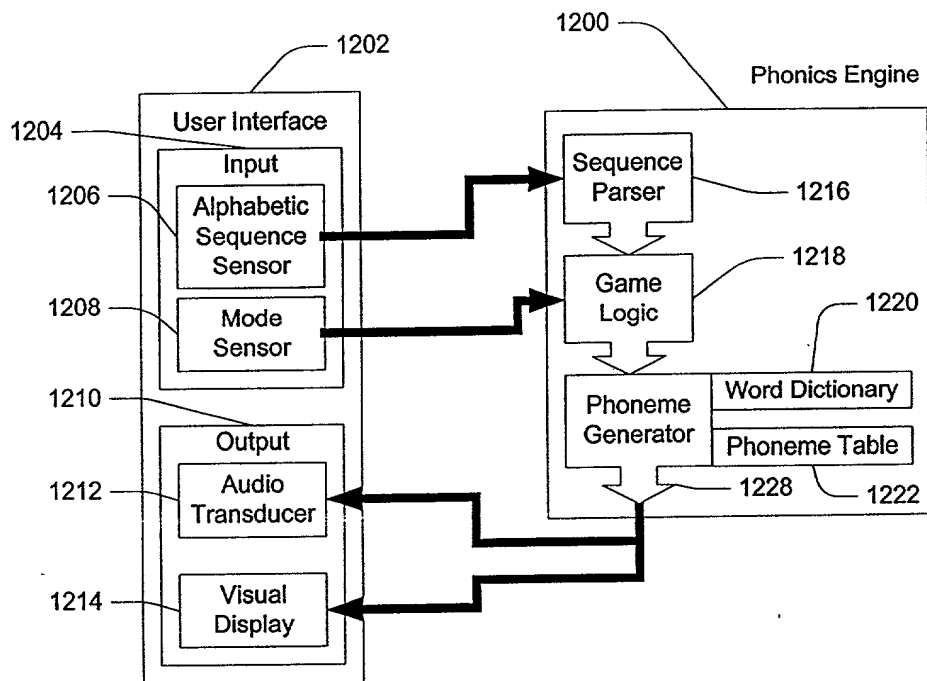
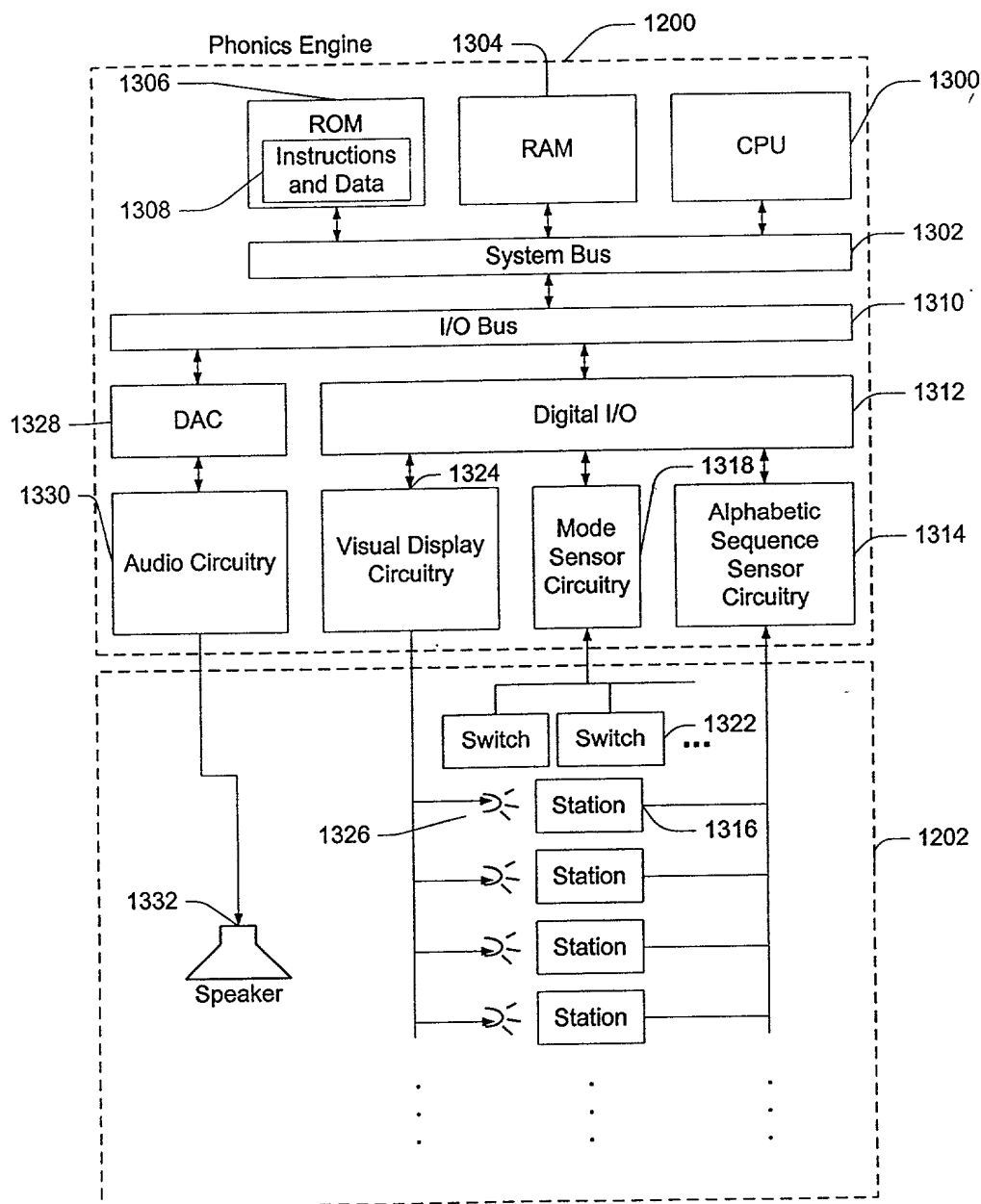


FIG. 12



User Interface

FIG. 13

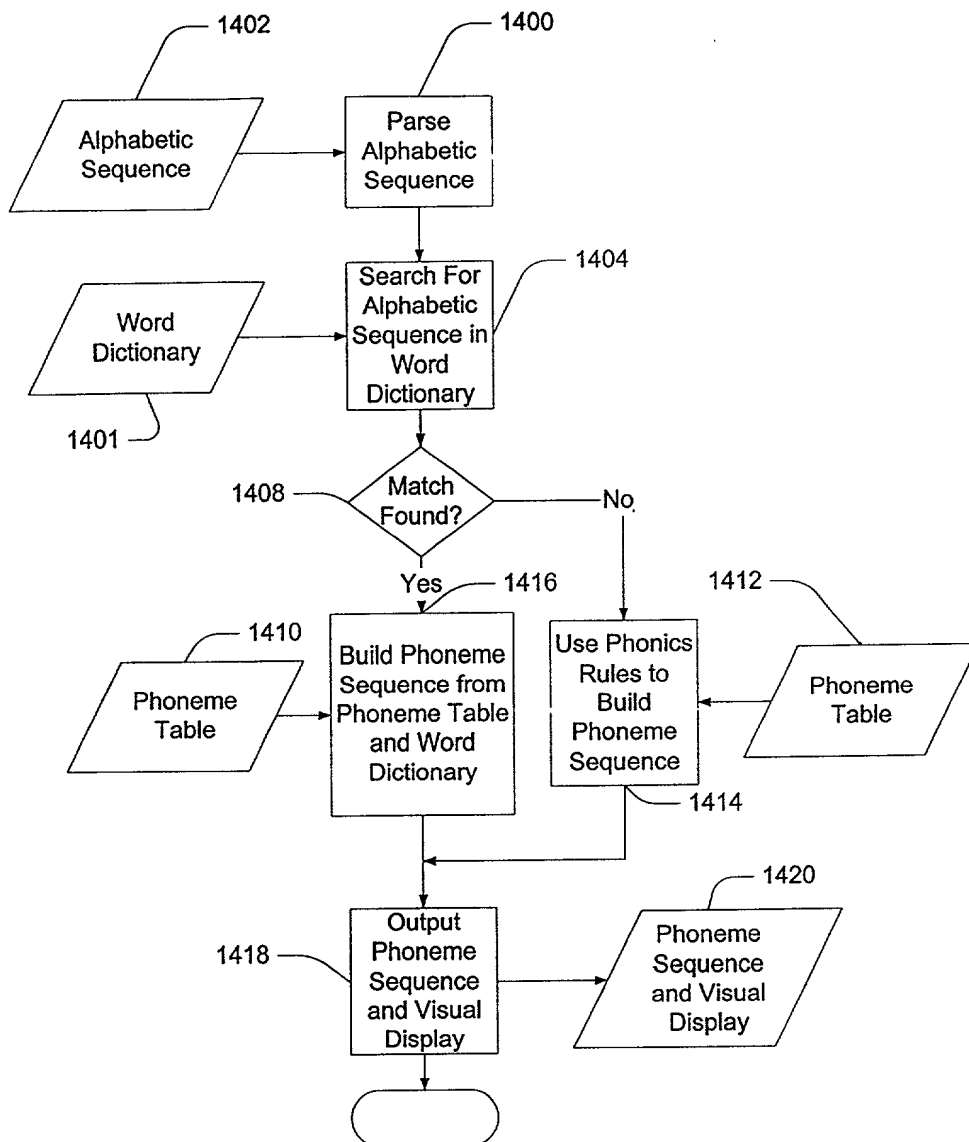


FIG. 14

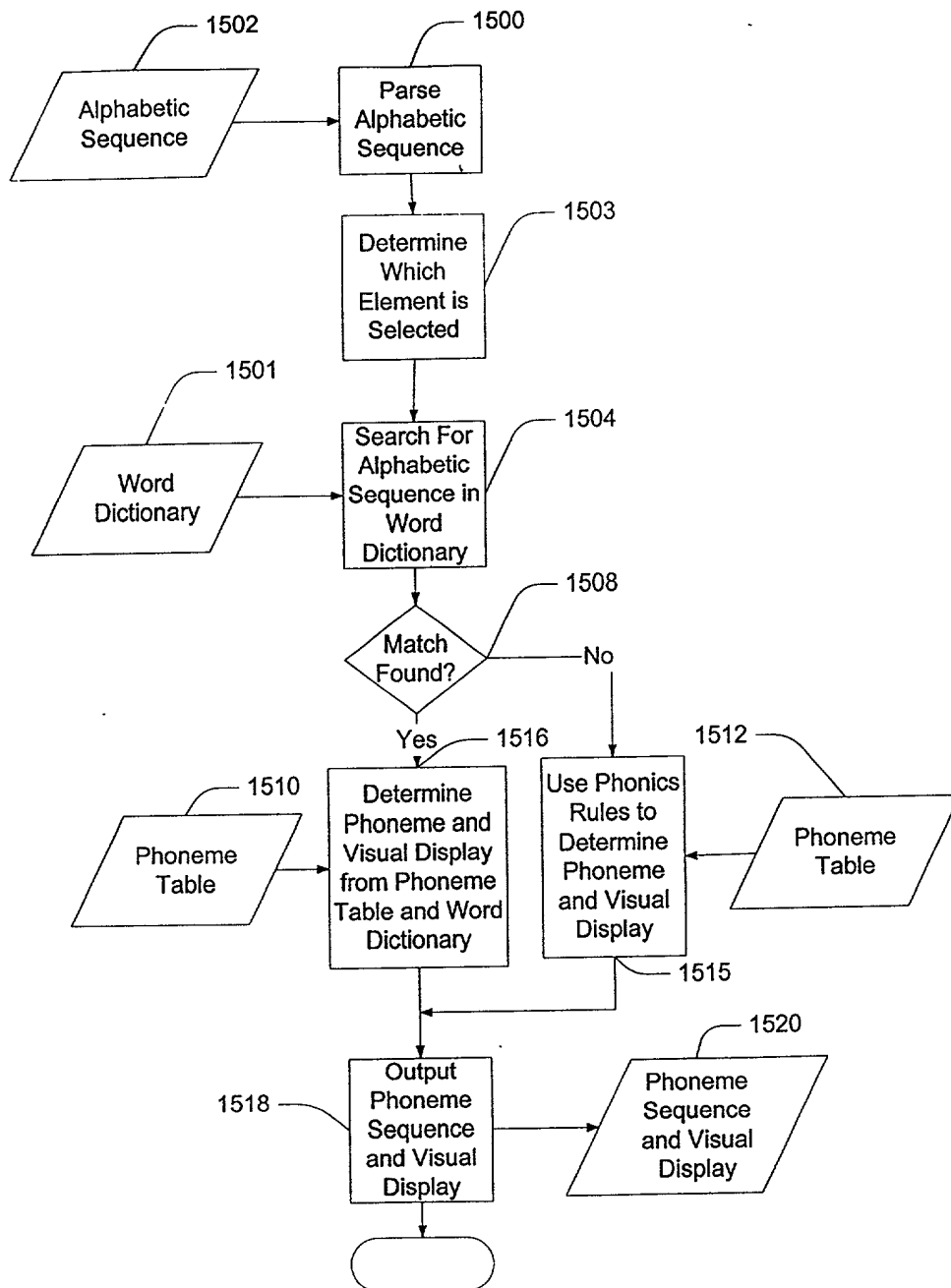


FIG. 15